P. mesaensis differs principally from *P. gracilior* (Hoffman) as follows:[2] *P. mesaensis* is uniformly light yellow whereas *P. gracilior* has a crescent-shaped spot in interocular triangle similar to *Hadrurus hirsutus*. Also, the dorsal plates of the abdomen show widespread dark spots on both sides of the middle line, which give a blackish tint to the plates. Pectinal teeth of *P. mesaensis* 32/32; *P. gracilior,* 26/28. The fourth caudal segment of the male *P. mesaensis* is considerably longer than carapace, while in *P. gracilior* this segment is a little shorter than carapace.

On *P. mesaensis* the teeth on the ventral surface of the movable finger truncated and uniform in size; *P. gracilior* has a large basal truncated tooth and 4 smaller teeth. Caudal keels more coarsely granular in general on *P. mesaensis* than on *P. gracilior*.

The Occurrence of Salmacia longipulvilli in the Hawaiian Islands (Diptera: Larvaevoridae)

By Paul H. Arnaud, Jr., Entomology Research Division, Agricultural Research Service, U. S. Department of Agriculture, Washington, D. C.[1]

The parasitic fly *Salmacia longipulvilli* (Tothill) has not been recorded in the Hawaiian entomological literature, although it appears to be an immigrant species from America. It was present in the Hawaiian Islands as early as 1929. Since *Salmacia longipulvilli* is similar in size to *Chaetogaedia monticola* (Bigot), the former has apparently been confused with *monticola* and remained undetected in collections.

These two species may be separated on a readily visible structural character of the head: *S. longipulvilli* has the facial ridges bare (except for several bristles immediately above and in as-

[2] Hoffman described only the male of the species.

[1] I should like to thank J. L. Gressitt, H. J. Reinhard, C. W. Sabrosky, G. E. Shewell, Alan Stone, and P. W. Weber for their aid and suggestions in this study.

sociation with the vibrissae); while *C. monticola* has the facial ridges bristled on more than the lower half. *S. longipulvilli* also possesses an orange-yellow abdomen with black base and apex and a median, occasionally broken, black longitudinal stripe on the dorsum of the abdomen. Females of *longipulvilli* tend to have more black on the abdomen than the males, having a broader median black stripe and more of the fourth, as well as the fifth, tergites black above. *C. monticola* in contrast has a grayish abdomen, with only slight traces of orange-yellow on the sides, and with the fifth tergite mostly orange-yellow. Figures 1 to 5 illustrate the head, wing, and terminalia of the male of *Salmacia longipulvilli.*

An annotated bibliography, Hawaiian distributional data, and host data on *Salmacia longipulvilli* follow:

Salmacia longipulvilli (Tothill) 1924

1924. *Gonia longipulvilli,* Tothill, Canadian Ent., 56(8):198, (9): 211, 212. [p. 198, key, male; p. 211, original description, holotype male from Royal Oak, British Columbia and 12 male paratypes from Alberta, British Columbia, North Dakota, Idaho, California, Arizona, Mexico; p. 212, summary of distribution, also Colorado.]

1928. *Gonia longipulvilli,* West, *in:* Leonard, Cornell Univ., Agric. Exper. Sta., Mem. 101: 818. [Distribution: Ithaca, New York, Ap[ril]. This is probably a misidentification.]

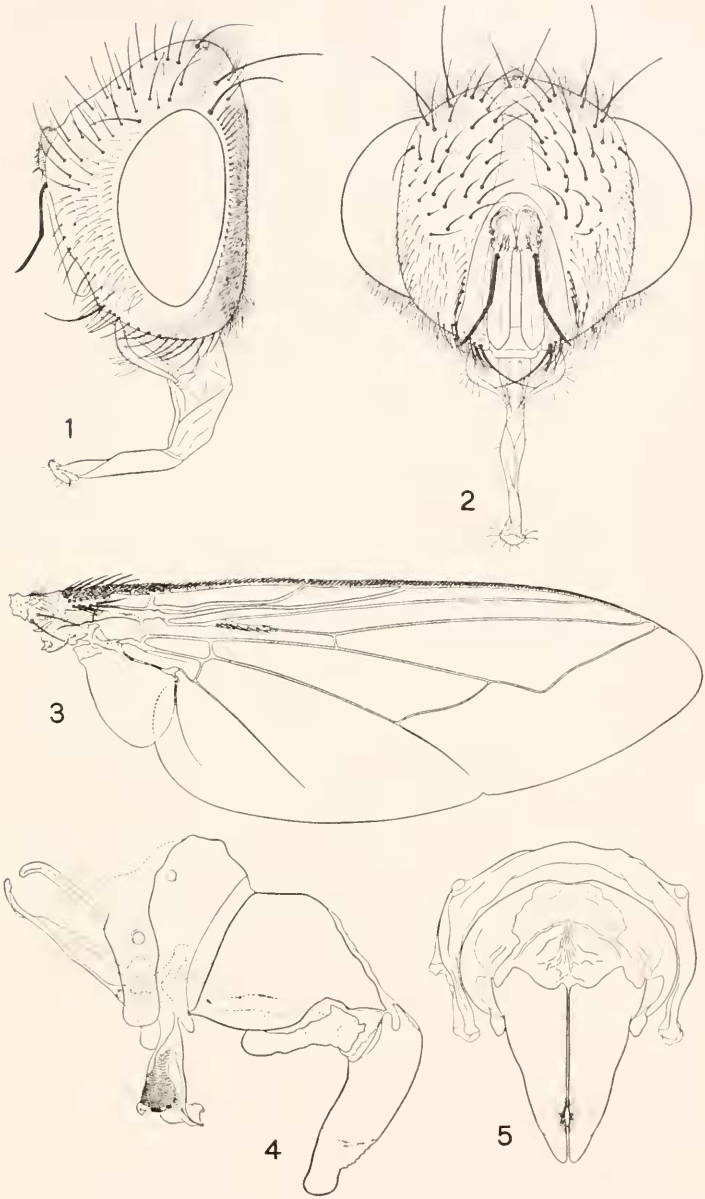
1933. *Gonia longipulvilli,* Rowe, Ent. News, 44(5): 126. [Distribution: Olympia, Washington.]

1940. *Gonia longipulvilli,* Morrison, Canadian Jour. Res., Sec. D, 18: 342, 354, figs. 15, 15a, 15b. [p. 342, key, male; p. 354, description of male terminalia; host *Agrotis orthogonia* in Saskatchewan.]

Explanation of Figures

Salmacia longipulvilli (Tothill). Male.

1. Head, lateral view. 2. Head, front view. 3. Right wing. 4. Terminalia, lateral view. 5. Terminalia, posterior view. Drawings by Mr. Kei Daishoji.



FIGS. 1–5.

(1943) 1944. *Gonia longipulvilli,* Brooks, Canadian Ent., 75 (12): 228, 229, 230. [p. 228, referred to capitata group, which is characterized and stated to be "late summer species."]

Type depository: Type No. 789, Canadian National Collection, Ottawa.

Hawaiian Distribution

The 47 specimens that I have examined have originated from the following localities:

Maui: 1 ♂, Waiakoa, 3,000 feet, VIII-1941, at light (E. M. Cooke, Jr.); 2 ♂♂, 1 ♀, Waiakoa, 3,000 feet, VIII-1941 (C. M. Cooke, Jr.); 1 ♀, Kula Pipe Line, 19-III-1932, 4,500–5,000 feet (O. Bryant); [in collection of Bernice P. Bishop Museum]; West slope Polipuli, 2,300, 2-III-47, Hawaii No. 2782 (K. L. Maehler) [collection U. S. N. M.].

Hawaii: 2 ♀♀, Upper Hamakua Ditch Trail, "10-2-1929" (O. H. Swezey); 2 ♂♂, 2 ♀♀, Humuula, 30-VII-35 (E. H. Bryan, Jr.); 1 ♂, Humuula, 3-VIII-35, Sophora (R. L. Usinger); 3 ♀♀ and 1 ♂, Keanakolu, Kaula Gulch, 29-X-1952, 7,000 feet (C. P. Hoyt); [in collection of Bernice P. Bishop Museum]; 18 ♂♂, 12 ♀♀, Waimea, 22-VI-49, collected at flowers *Foeniculum vulgare* L. (P. W. Weber) [in collections of the University of Hawaii, Bernice P. Bishop Museum, U. S. National Museum, Canadian National Collection, H. J. Reinhard, and the author].

Additional specimens are to be found in the Bernice P. Bishop Museum and, probably, in other collections in the Hawaiian Islands.

Host Data

Morrison (1940) has reported *Agrotis orthogonia* (Morrison) (family Phalaenidae) as a host of *longipulvilli* in Saskatchewan. In the collection of the United States National Museum there are now eight specimens labelled as paratypes [No. 28,300] of *longipulvilli* [Tothill stated there were six]. An interesting feature of five of these specimens, which originated from Tempe, Arizona, "10-8-17" (H. L. Dozier), is that they bear the labels as having been "Reared from *Feltia annexa,*" an important fact which was omitted by Tothill in reporting on the type series. The name *Feltia subterranea* (Fabricius) (family Phalaenidae) is the revised name for *Feltia annexa,* according to Dr. E. L. Todd.

Literature Cited

Brooks, A. R. (1943) 1944. Canadian Ent., 75(12): 219–236, figs. 1–13. [Date of publication: January 17, 1944.]

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Rowe, J. A. 1933. Ent. News, 44(5): 122–126, fig.

Tothill, J. D. 1924. Canadian Ent., 56: (8): 196–200; (9): 206–212.

West, L. S. *in:* Leonard, M. D. 1928. A list of the insects of New York. Cornell Univ., Agric. Expt. Sta., Mem. 101: 1–1121. [Family Tachinidae, pp. 807–821.]

Studies of the Byron Bog in Southwestern Ontario. IV. Seasonal Distribution of the Black Fly, Simulium vittatum Zett. (Diptera: Simuliidae)

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In the description of the Byron Bog (Judd, 1957) it was pointed out that one method of collecting insects in the bog was to make a circular sweep with an insect net, held at arm's length, through the tops of the bushes in the *Chamaedaphnetum calyculatae* association. The net used was one with a rim twelve inches in diameter and the radius of the circle over which the sweep was made was six feet. A single sweep was made each day from May 15 to November 15 in 1956 and all the insects collected each day were sorted and counted. Among the insects so collected were black flies which were all identified as *Simulium* (*Neosimulium*) *vittatum* Zetterstedt by Dr. D. M. Davies, McMaster University, Hamilton, Ontario. Three males and five females are deposited in the collections of McMaster University and all other specimens are deposited in the collection of the Department of Zoology, University of Western Ontario.

While the flies were in flight they were a considerable nuisance to anyone collecting in the bog, for they flew against the face, crawled into one's ears and nose and scuttled along the